



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/598,767 | 09/11/2006 | Yasubumi Furuya | 062888 | 9963 |
| 38834 7590 09/04/2008 WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036 | | | | |
| EXAMINER | | | | |
| SLIFKA, COLIN W | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 4162 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 09/04/2008 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/598,767

Applicant(s)

FURUYA ET AL.

Examiner

COLIN W. SLIFKA

Art Unit

4162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
4a) Of the above claim(s) 5-12 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 11 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-850)
Paper No(s)/Mail Date 09/11/2006 and 2/21/2007
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I claims 1-4 in the reply filed on 07/03/2008 is acknowledged. The traversal is on the ground(s) that Group I and Group III satisfy the combination of categories provided in under 37 CFR section 1.475(b)(1) and satisfy unity of invention under 37 CFR section 1.475. This is not found persuasive because there is no argument directed to the original restriction requirement.

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate

Art Unit: 4162

paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

Specification

The abstract of the disclosure is objected to because it is over the 150 word limit and longer than 1 paragraph. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, and 4 are rejected under 35 U.S.C. 102(a) as being anticipated by Furuya et al (JP 2003-286550). Furuya teaches a FeGa alloy material consisting of a rapid solidification thin band (par. 1, lines 2-3). Furuya

Art Unit: 4162

teaches a Fe-17 at %Ga thin band material with columnar crystal texture and a bcc structure (par. 12, lines 3-11). Regarding claim 3, Furuya also teaches a FeGa alloy with a magnetization of 217 ppm (par. 31, line 2). Regarding claim 4, Furuya gives an example of 230 ppm magnetostriction (par. 30).

Regarding the process limitations, specifically slices, powder or chops, and spark plasma sintering, "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.", (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious different between the claimed product and the prior art product (*In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113).

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Saito et al ("Microstructure and Magnetostriction of Rapid-Solidified F3-15 at % Ga Alloy"). Saito teaches $\text{Fe}_{100-x}\text{Ga}_x$ ($15 < x < 23$) rapidly solidified material with bcc structure (Introduction, par. 2). Saito also teaches the alloy having the axis

Art Unit: 4162

of grain orients to crystalline [001] direction and a columnar microstructure (Results 3.2, par. 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya et al (JP 2003-286550). As shown above, Furuya teaches a FeGa alloy with a magnetization of 217 ppm and 230 ppm (par. 30, and 31, line 2). Furuya does not specifically teach a magnetostriction of the entire claimed range but does teach that the strain is related to the heat treatment thereof. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the magnetostriction depending upon the desired level. It appears that the magnetostriction is a result effective variable and optimization thereof is within the purview of one of ordinary skill in the art.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya et al (JP 2003-286550) in view of Clark et al (US 2003/0010405). Furuya teaches a FeGa alloy material consisting of a rapid solidification thin band (par. 1, lines 2-3). Furuya teaches a Fe-17 at %Ga thin band material with columnar

Art Unit: 4162

crystal texture and a bcc structure (par. 12, lines 3-11). Furuya does not specifically teach that the Fe-Ga material has (001) crystalline anisotropy. Clark teaches a Fe-Ga alloy material with a (001) preferred orientation, and that this provides an inexpensive and very attractive alternative to existing rare earth based giant magnetostrictive materials. They will be cheaper than corresponding single crystal or directionally solidified textured materials and can be produced in larger quantities (par. 59, lines 34-35, and par. 60). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the (001) orientation at taught by Clark in Furuya's invention for better commercial and industrial purposes among others.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al ("Microstructure and Magnetostriction of Rapid-Solidified F3-15 at % Ga Alloy"). As shown above, Saito teaches $\text{Fe}_{100-x}\text{Ga}_x$ ($15 < x < 23$) rapidly solidified material with bcc structure (Introduction, par. 2). Saito also teaches the alloy having the axis of grain orients to crystalline [001] direction and a columnar microstructure (Results 3.2, par. 2). Saito also teaches the Fe-Ga alloy having a large magnetostriction of 300 ppm (Introduction, par. 2) and there is also a graph on the last page labeled "Applied Magnetic Field, $H/\text{kA}\cdot\text{m}^{-1}$ " showing magnetostriction results ranging from about 0 to about 160. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the magnetostriction depending upon the desired level. It appears that the

Art Unit: 4162

magnetostriction is a result effective variable and optimization thereof is within the purview of one of ordinary skill in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to COLIN W. SLIFKA whose telephone number is (571)270-5830. The examiner can normally be reached on Monday-Thursday, 10:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/COLIN W SLIFKA/
Examiner, Art Unit 4162

/Jennifer McNeil/
Supervisory Patent Examiner, Art Unit 4162